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HERPETOLOGY.—*Miscellaneous notes on Mexican lizards.*¹ HOBART M. SMITH, University of Illinois. (Communicated by HERBERT FRIEDMANN.)

For a number of years I have been accumulating notes on lizards of Mexico for use in a report upon the collections secured from 1938 to 1940 by my wife and me during my tenure of the Walter Rathbone Bacon Traveling Scholarship of the Smithsonian Institution. Preparation of a checklist of Mexican lizards prior to completion of this report requires preliminary publication of certain portions of these notes.

Unless otherwise stated, the specimens cited in the following pages are part of the collections mentioned previously, now part of the U. S. National Museum collection, to which the numbers refer. Other abbreviations are: EHT-HMS, the Taylor-Smith collection, at the University of Kansas; CNHM, Chicago Natural History Museum.

I am indebted to Dr. Edward H. Taylor, Dr. Doris M. Cochran, Karl P. Schmidt, and Dr. L. C. Stuart for numerous courtesies contributing to the collection and study of the material here reported.

Sphaerodactylus glaucus glaucus Cope

One hundred and sixteen typical specimens (see below) were secured at the following localities: VERACRUZ: Tezonapa (no. 113086). TABASCO: Álvaro Obregón (Frontera) (nos. 113096-120); Emiliano Zapata (Montecristo) (no. 113095); Tenosique (nos. 113087-94). GUATEMALA: Piedras Negras, Petén (nos. 113084-5).

All except a few from Piedras Negras were caught in towns, under loose bark of trees or in houses. On May 13, 1939, large quantities of eggs nearly ready to hatch, as well as adults, were found under the loose flakes of bark on trees in the central park of Álvaro Obregón. Many of the eggs that were retained hatched within a day or two. Generally two eggs were found in a clutch, although sometimes as many as six or

eight, presumably from several females, were found in a single spot. The eggs were nearly perfect spheres and were protected by a very brittle shell.

The adults of the east-coast race of this species are characterized by generally having a small black spot middorsally on the neck; a black spot on each side of rump, above insertion of hind leg, each bordered posteriorly by a light spot; a light spot on knees and sometimes elbows; a distinct, light band across distal portion of thighs and lower foreleg; and a distinct light line on posterior surface of thigh, extending onto base of tail.

Young specimens are similarly marked, although a little darker and with numerous very tiny white flecks scattered over the back. The only great difference from the adults in markings is in the neck region. A series of small rounded light spots encircles the dorsal and lateral surfaces of the neck a short distance in front of the arm insertion; the two most prominent spots are those on each side of the middorsal line. Surrounding the spots is an irregular band of black; its most prominent portion is a spot between and slightly anterior to the larger, paravertebral light spots. Specimens of larger size lose all these neck markings save the median dark spot.

A series of atypical specimens is available from various localities near Tehuantepec (La Presa de Mixtequilla, Cerro Guengola, Cajón de Piedra) as well as from the city itself (nos. 113139-63). These differ from typical *glaucus* by lacking any distinct light and dark marks in the adult; even the very young show no distinct markings. These might be considered racially distinct from *g. glaucus*, except for two adult specimens which possess an irregular, black, double collar about the neck. These definitely link the Tehuantepec series with the west-coast race *torquatus*, typical specimens of which are available from more remote localities on the Isthmus toward the coast west of Salina Cruz. The latter race also is

¹ Received September 3, 1948.

characterized by absence of the distinctive markings of *g. glaucus*, but adds a new character in the possession of two broad, distinct black collars about the neck. In the area in which they occur on the Isthmus, on the coast southwest of Tehuantepec, they exist to the almost total exclusion of the unicolor type which occurs around Tehuantepec city; in fact only two specimens of the latter were said to be collected with the collared specimens. Since the collared specimens possibly range rather widely on the Pacific coast northwest of the Isthmus, as indicated by the type locality of *torquatus* at "Mazatlán" (Sinaloa?); and since the unicolored or typical *glaucus* type of pattern rarely if ever occurs with the collared specimens, there is ample reason to hold the latter as racially distinct from the others. In fact, Taylor (Univ. Kansas Sci. Bull. **31**: 302-305. 1947) has already demonstrated the distinctness of *torquatus*.

The unicolored specimens from the vicinity of Tehuantepec are, I believe, essentially intergrades between typical *glaucus* and *g. torquatus*; certainly they are intermediate both geographically and in pattern; they lack the characteristic collar of *torquatus*, yet like it are practically unicolored otherwise, contrary to *glaucus* which has distinct leg and neck markings. If Peters's *inornatus* from "Mexico" actually belongs to *glaucus* and is not a *lincolatus* with incorrect locality data as suggested by Barbour (Mem. Mus. Comp. Zool. **48**: 240. 1921), it may be based on the unicolored intergrades between *g. glaucus* and *g. torquatus*, from the vicinity of Tehuantepec.

The U. S. National Museum has 20 others, as follows: CAMPECHE: Apazote (no. 47796). OAXACA: Juchitán (nos. 30235-8). TABASCO: Álvaro Obregón (nos. 37749-51, 46694, 81166). VERACRUZ: Coatzacoalcos River (nos. 61184-5); Tuxpan (no. 25215). YUCATÁN: Mérida (nos. 6572, 62995-6); Cozumel Island (no. 47644). INDEFINITE: "Mexico" (nos. 96108-10).

Sphaerodactylus glaucus torquatus Strauch

Twelve specimens are from Cajón de Piedra (nos. 113126-33) and El Limón (no. 113134), Oaxaca. Both localities are near the coast west of Salina Cruz.

Corythophanes percarinatus Duméril

A single specimen (no. 113171) is from Colonia Hidalgo, 8 kilometers north of La Esperanza, Chiapas. It differs from a single specimen avail-

able from "Guatemala" (no. 25217) by having a blunter snout, smaller temporals, head scales less strongly keeled posteriorly, and scales on shank and thigh much smaller. Further specimens will be necessary to show whether these differences are due to individual variation; that they might have little significance is shown by considerable individual variation in *cristatus*, in which the temporal, thigh and shank scales vary considerably in size.

The species has not previously been recorded from Mexico.

Ctenosaura similis (Gray)

Thirty-eight specimens were secured, at the following localities: CHIAPAS: Palenque (nos. 115310-7); Tonálá (nos. 115318-30); La Esperanza (nos. 115331-3). TABASCO: Tenosique (nos. 115306-9).

These specimens agree sufficiently well with the characters described by Bailey (Proc. U. S. Nat. Mus. **73** (12): 32-37, pls. 16-20. 1928) for this very distinct species. In addition to his observations it may be noted that in females the dark bands so characteristic of males are broken and frequently so dim as to be scarcely discernible. The pattern in these usually consists of numerous, scattered, short black lines. The head is mostly light in males as a rule, but regularly in females and rarely in males also the head is largely dark.

There are very obvious differences between the skulls of *similis* and those of *acanthura* and *pectinata*.

Other Mexican specimens in the U. S. National Museum number 34. They are from the following localities: VERACRUZ: Mirador (no. 6403). YUCATÁN: Merida (nos. 8220-1); Chichen-Itzá (nos. 47794, 47953-5, 47992-3); La Vega (no. 47564); Puerto Morelos (no. 47647); Mujeres Island (nos. 47559-63); Cozumel Island (nos. 13897-13900, 47565) "Yucatán" (nos. 24724-5, 24898). CHIAPAS: Palenque (no. 47593); Tonálá (nos. 46685, 46693). TABASCO: Montecristo (Emiliano Zapata) (nos. 47793, 47802). INDEFINITE: "Mexico" (nos. 11002-3); "Tehuantepec" (nos. 10286, 56782, 58499). Some of these were not listed by Bailey (*op. cit.*); others were associated with the wrong numbers, and the one from "Mirador," Veracruz, was associated by him with *acanthura*. It is definitely not the latter, since the tail spines are smaller, no two whorls of spines are separated from each other by a single row of small scales, the sides are barred

(juvenile female), and the distance from pineal spot to posterior margin of head is short. It is not necessarily certain that the specimen came from Mirador, but at least the existence of *similis* in the region of central Veracruz is demonstrated by adults from Tierra Colorada, near the city of Veracruz (EHT-HMS collection, see Smith, Kans. Univ. Sci. Bull., 22: 139-140. 1935). The specimens labelled "Tehuantepec" (Dr. Spear and J. Hurter) do not necessarily imply the city of Tehuantepec, where the species apparently does not occur, but rather the Isthmus.

***Ctenosaura acanthura* (Shaw)**

Only four specimens were secured, at Hda. La Clementina, 4 miles west of Forlón, Tamaulipas (no. 115259) and 10 miles east of San Juan de la Punta, Veracruz (no. 115260).

The museum has 27 other specimens, as follows: TAMAULIPAS: Tampico (nos. 36261-4, 36408, 36628, 36672, 36862-5, 37008, 37356). VERACRUZ: Panuco River, 80 miles above Tampico (nos. 26316, 26323, 26340-1); between Tampico and Veracruz (nos. 82181-3). OAXACA: Dondominguillo (no. 72737). INDEFINITE: "Mexico" (nos. 42145-6, 42842, 44179, 82184); "Tehuantepec" (no. 58498). Some of these were listed by Bailey (*op. cit.*); the others were omitted. However, Bailey included, in his list of *acanthura*, one *similis* from Veracruz (no. 6403) and several *pectinata* (*sensu lato*) from Isabel Island and the Tres Mariás Islands, and from the states of Guerrero, Oaxaca, and Michoacán. The specimen labeled "Tehuantepec" (J. Hurter) almost certainly does not refer to Tehuantepec City, where intensive collecting in recent years has failed to verify its existence in the region, but rather to the Isthmus.

Why several west-coast *pectinata* were included by Bailey in *acanthura* is not readily apparent. Not a single one can be referred to that species; none of the adults are black; none have large spines on the tail; and none have the small scales between any pair of whorls of large scales reduced to a single row at any point. There is no reason whatever to believe that *acanthura* occurs on the Pacific coast, so far as indicated by specimens now in the National Museum. The species appears to be perfectly well defined and restricted to the Atlantic coast from the Isthmus of Tehuantepec north to central Tamaulipas. It occurs in the same general area as *similis*, but its range appears to overlap that of no other species.

***Ctenosaura pectinata* (Wiegmann)**

Fifty-one specimens were secured, at the following localities: GUERRERO: Acapulco (no. 115274); Cacahuamilpa (nos. 115277-82); 20 km north of Mexcala (nos. 115275-6); Tierra Colorada (nos. 115261-73). MICHOACÁN: 4 km north of Apatzingán (nos. 115299-302); Parácuaro (no. 115298). MORELOS: 5 km south of Cuernavaca (nos. 115295-7); Puente de Ixtla (nos. 115303-5). OAXACA: Cerro Arenal (no. 115283); El Limón (no. 115294); Escurana (nos. 115292-3); San Bartolo (no. 115291); San Gerónimo Ixtepec (no. 115290); Santiago Lachi-guirri; Tehuantepec (nos. 115284-9).

The Museum has 163 other specimens as follows: SINALOA: Mazatlán (nos. 7180-3, 47956-7); Culiacán (no. 70665). NAYARIT: Tres Mariás Islands (nos. 14078, 72655-7); Maria Madre Island, Tres Mariás (nos. 24623-30, 71634-5); Isabel Island (nos. 24631-3); Minimán (no. 51402); San Blas (nos. 51403-7, 65138, 76613-8); "Tepic" (no. 58753). JALISCO: Barranca Ibarra (nos. 18967, 18970, 19032); Guadalajara (nos. 24922-3); San Marcos (nos. 18968-9). COLIMA: Colima (nos. 12196, 24708-17, 24719-23, 24726, 30594-603, 31484, 58670, 63702-31, 63734-68); Manzanillo (no. 63701); Tonila (nos. 63732-3). MICHOACÁN: Sierra Madre (no. 12230); Uruapan (no. 10234). GUERRERO: Balsas (nos. 47919-20, 58137); Tlapa (no. 46860). MORELOS: 10 miles south of Cuernavaca (nos. 20168-72). PUEBLA: Piaxtla (no. 47729). OAXACA: Cuicatlan (nos. 46835, 47194); Guichicovi (no. 47933); Juchitán (no. 72738); Tehuantepec (nos. 7533-4, 30430). INDEFINITE: "Mexico" (nos. 31286, 83330).

The various specimens from the west coast of Mexico south of Sonora variously assigned by Bailey (*loc. cit.*) to *acanthura*, *brachylopha*, *brevirostris*, *parkeri*, and *pectinata* all belong, I believe, to a single species. All the specimens in the U. S. National Museum assigned by him to these various names have been examined, and I can see no justification whatever for segregating them into so many species. That his arrangement is highly artificial and not a natural one (i.e., of true species and subspecies) is made immediately obvious by the recognition of several "species" from single localities. *C. similis* and *acanthura* may occur in the same locality, but this is the only recognized instance in which two species of the same group have overlapping ranges, and even this is doubtful because of the considerable competition. But that four species (*parkeri*,

pectinata, *brachylopha*, *acanthura*), all of the same group, should inhabit such restricted areas as the Tres Mariás Islands, is preposterous. There are other cases of several species cited by Bailey from single localities. The reason for such segregation without regard to geography and the natural history of the subject, is apparently due to the overemphasis of certain "key" characters which were assumed not to vary but which actually do, to a considerable degree. The five anatomical categories given the rank of species are:

1. "Median row of dorsal scales interrupted at sacrum."
2. "First and second or first, second, and third whorls of spinous scales interspersed with three rows of small flat scales".....*acanthura*
- 2.' "First, second, third, fourth, and fifth whorls of spinous scales interspersed with three rows of small flat scales".....*brachylopha*
- 1.' "Median row of dorsal scales enlarged and extending from nape to tail, without interruption at sacrum."
3. "Head very short, rostrum conspicuously decurved".....*brevirostris*
- 3.' "Head normal, rostrum not conspicuously decurved."
4. "First six whorls of spinous scales of the tail separated from each other by four or more rows of small flat, smooth scales".....*parkeri*
- 4.' "First five or six whorls of spinous scales separated from each other by three rows of smaller scales, the next five or six whorls being separated from each other by two rows of smaller, flat scales".....*pectinata*

The first division is impractical. The character is of aid in separating certain species of the genus, but in the area in question specimens show both extremes and all intermediates. In 28 specimens from Guerrero and Morelos, 8 have the series of enlarged middorsals passing over the sacral region without interruption; in the others the series is narrowly interrupted by as few as two small scales, or broadly interrupted by as many as 20 small scales. In one of five specimens from Michoacán, the series is complete in one, interrupted by 9 to 16 scales in the others. In 15 specimens from Oaxaca; the sacral series is uninterrupted in four, and interrupted by one to 14 scales in the others. The variation is such that it seems impossible to believe that this criterion has any significance. There is no correlation of the variation with other scale characters or with color.

By literal adherence to the word in the second division, no west-coast specimens could be associated with *acanthura*, but by the same interpretation neither could true *acanthura*. In the latter species the tail spines are stronger, longer, and more erect; the small scales between at least one or more pairs of whorls of enlarged spines are rarely not reduced to one row; adults and subadults (both sexes) become black by a general darkening of the whole body (not by encroachment of black upon spots that remain light, as in *pectinata*); and the reduction to two rows of the small scales between the whorls of enlarged scales begins with the second or third pair. Specimens agreeing with these characters are not represented in those examined from the Pacific coast, and there is good reason to believe the species does not exist there.

The third division, separating *brevirostris*, does not seem to me to have any support whatever even in the material assigned by Bailey to the two categories. The heads of presumed "*brevirostris*" specimens are in no respect whatever, so far as I can see, shorter than those of *pectinata*. It is true that the two cotypes superficially appear to have short heads, but the snout of one obviously has been pushed in, while the other has a partly broken skull.

The last division, segregating *parkeri*, is the most nearly feasible of all, but even this, I believe, has no special significance. Three paratypes cited by Bailey are from "Tres Mariás, Nayarit," which means the Tres Mariás Islands, where Bailey also distinguished *pectinata*, *brachylopha*, and *acanthura*. There is no geographic sense whatever in the existence of such a species, so very close in all characters but one to the specimens secured in the same localities, in two so very different spots—Barranca Íbarra, Jalisco (just north of Guadalajara), and on the Tres Mariás Islands. The Tres Mariás specimens obviously represent nothing but variations of the single species that occur on the islands, and I regard the Barranca Íbarra specimens in the same light. It is noteworthy that Bailey did not associate with the latter another specimen (U.S.N.M. no. 19032) of the same series and with the same data. It is true, however, that all of the three Barranca Íbarra specimens have *parts* (in most cases the extra row is reduced a few scales on each side of the middorsal row) of a fourth row intercalated between the proximal whorls of enlarged spines, while the same character is occasional in its occurrence elsewhere.

Two specimens (from Guerrero and Oaxaca) have portions of a fourth row intercalated between the basal five whorls of spines; in two others (Oaxaca, Guerrero) it occurs between the first, second, and third whorls; in two others recorded the extra row occurs only between the first and second whorls. These data indicate that the Barranca Íbarra specimens may uniformly be provided with four rows between the proximal whorls of spines, and thus deserve a name; it is also possible that the three specimens do not give a fair representation of the local variation, which may well actually be the same as elsewhere. Against the recognition of a local race at Barranca Íbarra is the fact that *Ctenosaura* does not incline toward formation of such restricted populations. Its members otherwise have large geographic ranges representing major faunal areas.

The elimination of such a miscellany of supposed species on the Pacific coast makes very clear and reasonable the distribution of the species of *Ctenosaura* in Mexico. *C. hemilopha* occurs in Baja California and Sonora, and southward is replaced by *pectinata*, which occurs from central Sinaloa to the Isthmus of Tehuantepec. Beyond the Isthmus (toward Central America), on both coasts, *similis* occurs to the exclusion of all others of its group; it extends northward on the Atlantic coast to central Veracruz. Here it either overlaps or dovetails into the range of *acanthura*, which occurs from Oaxaca (Dominguillo) northward to central Tamaulipas. The only conspicuous overlapping of ranges occurs between members of different groups; i.e., the species *clarki*, *quinquecarinata*, *erythromelas*, and *defensor* belong to quite a different group than the others; they are of different habitus, size and habits, and occur commonly over broad areas occupied by *acanthura* and its relatives.

Phrynosoma boucardii (Bocourt)

One fine example is from Zimapán, Hidalgo (no. 111370). The U. S. National Museum has no others of the species.

This specimen differs from *orbiculare*, which it closely resembles, in the large size of the post-orbital, temporal and occipital spines, the feeble keels on the gular scales, and the nearly erect position of the occipital spines. It measures 79 mm from snout to vent; the frontal region is strongly concave, the superciliary regions elevated and terminating posteriorly in a relatively large spine measuring a maximum of about 3.5 mm. The occipital spines are 5.8 mm long (maximum),

and their posterior edges make an angle of about 75° with the horizontal, while the temporal spines are at an angle much less than 45°. The temporal spines extend farther posterior than the occipital (because of their nearly horizontal position), and the posterior measures 5.7 mm (maximum). The posterior infralabials, the postaurals and the subpostaurals are conspicuously enlarged. The gulars are feebly keeled.

Sceloporus malachiticus acanthinus (Günther)

Thirty-one specimens are from La Esperanza, Las Nubes, Salto de Agua, Cruz de Piedra, Finca Juárez, Rancho Las Gradass, and La Magnolia, all in the vicinity of Escuintla, Chiapas (nos. 112112-40; EHT-HMS 17046-7).

The dorsals vary from 34 to 39 (except in two, noted below), average 36.7 (34, two; 35, four; 36, eight; 37, six; 38, four; 39, five); femoral pores 12 to 16, average 13.7 (12, nine; 13, sixteen; 14, seventeen; 15, twelve; 16, two): there are two canthals, but in seven the anterior is forced above the canthal ridge; the median frontonasal is in contact with the lateral frontonasal in all except one side of one, both sides of four; one or more supraoculars are in contact with the median head scales in all except on one side of one, on both sides of another; the supraoculars are partially split (small outer scales) in one; the lorilabials are reduced to one row below the subocular on one side in three, on both sides in two; there are 3 scales (minimum) from median frontonasal to rostral in twenty, 4 in seven.

The most interesting of this series are 12 from Finca Juárez. This locality is at 2,500 to 3,000 feet in elevation, as high as or higher than any other at which *acanthinus* was secured. Seven of these are more or less typical of the subspecies, while the other five show so many combinations of characters of *taeniocnemis* and *acanthinus* that they must be considered intergrades. Two of them have small outer supraoculars; three have the median frontonasal separated from the lateral frontonasals on both sides, and one specimen on one side; three have four scales from the median frontonasal to the rostral and one has five; one has the aberrant count of 42 dorsals and another has 45. None of these can be considered typical *taeniocnemis*, although all approach the sum character of that race in a varying number of respects. I can see no alternative to the conclusion that these represent intergrades, that *acanthinus* and *taeniocnemis* intergrade, and therefore that the former must be removed from

the *spinus* group and placed in the *formosus* group.

All specimens were found on the trunks of large trees. They were very wary and seldom seen except when we were specifically hunting them.

In addition to these are six noteworthy specimens (EHT-HMS X5020-4) from La Gloria, Oaxaca. This locality is on the east side of the Isthmus of Tehuantepec, almost directly north of Nilotpec, but in the moist, high forest on the Atlantic slope, at about 1,500 feet elevation. The specimens were collected by Thomas MacDougall on dead, burned tree trunks in open cornfields recently cleared from the forest. They have 35 to 40 dorsals (35, 36, 37, 40, 40); 10 to 13 femoral pores (10-10, 11-?, 11-11, 11-12, 11-12, 13-13); two canthals; median frontonasal separated from laterals; large supraoculars in a single row and not in contact with median head scales, sometimes the outer row represented by one or two small scales split from "inner" row; lorilabials in two complete rows below subocular; and 4 to 6 scales (minimum counts) from median frontonasal to rostral (4, 5, 5, 5, 5, 6). The only adult (a female) measures 83 mm snout to vent; the others are juveniles. The color above is gray (no trace of blue), with a row of brownish spots on either side of middorsum, each spot covering about three scales; a feebly indicated, black, dorsal nuchal collar, visible also on sides of gular region; in the adult female a faint indication of the characteristic, broad, short, dark, median borders of the lateral belly patches occurring in males of this group.

The proper allocation of the La Gloria series is not too obvious. The specimens can not be associated with *taeniocnemis*, since this is a highlands species with divided supraoculars, much blue in the coloration, smaller dorsals, more numerous femoral pores, and no distinct rows of large spots. They can not be associated with *salvini*, which also has more numerous dorsals and in addition a complete nuchal collar. Although the large supraoculars and larger dorsals are reminiscent of *acanthinus*, the latter race has large frontonasals in contact with each other, and the supraoculars generally in contact with the median head scales.

Because of the impossibility of association of the La Gloria specimens with typical members of other races in adjoining areas, they might be considered as representing still a different race. In support of this view are the peculiar, very small, rounded scales in the internasal area; rare speci-

mens of *taeniocnemis* show a similar condition, but otherwise it is unique. However, it seems more probable to me that the La Gloria specimens represent intergrades between *acanthinus* and *salvini*; they combine the characters of these two races and show no peculiarities not existing in one race or the other, except for the small internasals as previously mentioned. La Gloria is also geographically intermediate between the known ranges of the two races. Therefore, until further specimens from other localities, especially in western Chiapas (both Atlantic and Pacific slopes), indicate otherwise, it appears best to consider the La Gloria specimens as intergrades between *acanthinus* and *salvini*.

Sceloporus malachiticus taeniocnemis Cope

Fifteen specimens (nos. 112141-54) were secured at an elevation of about 5,500 to 6,500 feet on Mount Ovando, near La Esperanza, Chiapas. The adults are greenish above, as are the *acanthinus*. The dorsals vary from 37 to 47, average 41 (37, one; 38, one; 39, three; 40, one; 41, three; 42, two; 44, two; 47, one); the femoral pores are 11 to 15, average 12.6 (11, one; 12, eleven; 13, nine; 14, two; 15, one); the canthals 2-2, the anterior forced above the canthal ridge on one side in one; the median frontonasal is in contact with the laterals on both sides of two, on one side in one; there are 3 to 5 scales from rostral to median frontonasal (3, four; 4, eight; 5, three); one or more supraoculars are in contact with the median head scales in two; the supraoculars are in a single row on one side of three, on both sides of two; there are two complete rows of lorilabials below subocular on one side in two, on both sides in three.

The type of *taeniocnemis* (U.S.N.M. no. 24768, "Guatemala", collected by H. Hague) is a juvenile measuring 39 mm snout to vent, with all the outer scales missing; dorsals 40; femoral pores 13 or 14; two distinct rows of supraoculars; median head scales much subdivided; 4 scales from median frontonasal to rostral; lateral frontonasals separated from median; two complete rows of lorilabials; canthals 2-2.

Through the courtesy of Dr. L. C. Stuart I have had the privilege of examining a series of 20 specimens from Finca Samac, near Cobán, Alta Verapaz, and 3 others from the vicinity of Nebaj, El Quiché, Guatemala, all collected by him. The former series may be considered topotypic, since Hague is known to have collected in Alta Verapaz, and since the type of *taeniocnemis*

agrees in detail with several young from Finca Samac. I can not distinguish these specimens from those from Mount Ovando by any character which can not be attributed to the influence of adjacent forms, or which to my mind is significant. The specimens from Guatemala never have single supraoculars nor a number of other variants which occur in the Mount Ovando series; however, their existence in the latter is almost certainly due to the influence of the closely associated race *acanthinus*, which *taeniocnemis* approaches in character toward the edge of its range. The only peculiarity I have discovered by which the Mount Ovando series differs from that from Guatemala is in the reduction in the former of the lorilabials to one row at some point below the subocular. I do not believe this difference sufficiently significant or well established to warrant an attempt to split *taeniocnemis*; if other minor differences should be discerned, the two populations are so alike, compared with other subspecies of *malachiticus*, that they can not in any circumstance be considered equivalent of *smaragdinus*, *salvini*, *acanthinus*, etc.

Other specimens which must be referred to *taeniocnemis* are three from Cobán, Guatemala (C.N.H.M. 20533, 21003; A.N.S.P. 11316); one from Teopisca (between San Cristóbal and Comitán), Chiapas (U.S.N.M. no. 47503); and three from Pinobete, 8,400–8,800 feet, Chiapas (U.S.N.M. nos. 47761–3). The race has a central distribution on the highlands to the west and north of the range of *smaragdinus*.

The latter subspecies includes specimens from the central plateau of Guatemala and its projections; they are characterized by small size, numerous dorsals (39 to 51), and a single canthal. Females measuring no more than 52 mm snout to vent contain young in the uteri.

Leiopisma assatum assatum (Cope)

Fifty-five specimens were secured, all in the state of Chiapas in the vicinity of La Esperanza (La Esperanza, Cruz de Piedra, Salto de Agua, Rancho Las Gradass, La Magnolia, nos. 115204–39). The U. S. National Museum has in addition one other specimen from Huehuetán, Chiapas (no. 47758). In 52 counts, the rows of dorsals vary from 29 to 37 (29, two; 30, thirty-two; 31, two; 32, sixteen). In 49 counts, the dorsals from parietals to posterior margin of thighs are 65 to 77, average 71.0 (65, one; 66, one; 67, three; 68, three; 69, seven; 70, six; 71, eight; 72, five; 73, six; 74, four; 75, three; 76, one; 77, one).

This species was most frequently encountered on the ground in coffee groves. In the dry season, when the ground is covered with a thick layer of dry leaves and there are no low plants to obstruct vision, they were easily captured by walking slowly through the leaves and watching closely for their wriggling, scampering bodies as they scurried out from the leaves near at hand and dived under others a few feet away. It was necessary to fall on the lizards immediately as they appeared, as otherwise they hid in the leaves and were almost impossible to find.

Leiopisma assatum taylori Oliver

Nineteen specimens referred to this race were collected: GUERRERO: Agua del Obispo (nos. 115240–1); Tierra Colorada (no. 115242). OAXACA: Matías Romero (nos. 115243–6). CHIAPAS: Tonalá (nos. 115247–58). In addition the U. S. National Museum has one from "Mexico" (no. 46866) and 13 from "Tehuantepec," Oaxaca (nos. 30101–7, 30109–13, 30170).

The single specimen without definite locality data has 24 scale rows. The three from Guerrero have 26 (two) and 28; the dorsals are 69 (two) and 72; two have a nuchal on both sides, and one has one on only one side. The four from Matías Romero have 26 and 28 (three) scale rows; the dorsals are 68, 71 and 72 (two); two have nuchals, but in one of these on one side only; the other two have no nuchals. In the thirteen from "Tehuantepec," the scale rows are 26 (two), 28 (ten) and 30 (one). In the 12 from Tonalá, the scale rows are 26 (one), 28 (six) and 30 (four); the dorsals 66 (two), 68 (one), 69 (three), 70 (one), 71 (one), 72 (one) and 73 (one); three have nuchals on both sides, one has one on one side, and the remainder (eight) have none. The closest approach to *a. assatum*, as might be expected, is shown by the southernmost specimens, from Tonalá, in which the scale row counts of *a. assatum* occur in 33 percent of the specimens. The dorsal scale counts of the two races blend over quite a large area, since even the Guerrero specimens are within the lower limits of the range of variation in typical *a. assatum*.

Leiopisma gemmingeri (Cope)

Sixteen specimens were secured, as follows: OAXACA: 17 miles north of Niltepec, on south side of Sierra Madre, in pine forest at 3,500 feet elevation (nos. 115195–6); San José Manteca, 5 km from Yautepec (no. 115194); Tres Cruces (nos. 115188–93). VERACRUZ: Tequoyutepec

(nos. 115197-203). In addition the U. S. National Museum has four cotypes from Orizaba, Veracruz (no. 6331), one from Río Verde (Veracruz) (no. 32372), and one from an unknown locality ("Panama," J. Hurter) (no. 56976).

In 20 of these specimens (excluding no. 32372, not seen), the scale rows vary from 25 to 28 (25, one; 26, five; 27, two; 28, eleven); and the dorsals from 60 to 68 (60, one; 61, one; 62, eight; 63, two; 64, two; 65, one; 67, one; 68, three). The color pattern is constant, save that in the specimens from Tres Cruces and San José Manteca the only portion of the lateral dark stripes that is well defined is the extreme upper edge; in the others the stripe is very dark throughout most of its width.

Leiolopisma silviculum Taylor

The U. S. National Museum has two specimens belonging to the recently described *Leiolopisma silviculum* Taylor (Copeia, 1937, no. 1: 5-7), known previously only from the type locality near San José de Gracia, Veracruz. They are no. 12092, from "Mexico," and no. 47611, from Cuicatlán, Oaxaca. Both have 30 scale rows and the limbs strongly overlapping, as do the two types. The lateral dark stripe is poorly defined posteriorly.

Measurement	No. 12092	No. 47611
Snout to vent	44.5 mm	47.0 mm
Hind leg	18.4 mm	17.5 mm
Fore leg	11.0 mm	12.5 mm
Axilla to groin	23.0 mm	27.0 mm
Dorsals	68	64

Eumeces lynxe Wiegmann

Twenty-seven specimens were secured, at Durango, Hidalgo (nos. 113576-82); Pan de Olla, Veracruz (nos. 113583-600); and Cruz Blanca, Veracruz (no. 113601).

Four specimens (one from Hidalgo, three from Pan de Olla) have three supraoculars as is typical of the variant named *furcirostris*; in these, of course, the large anterior supraocular is in contact with the parietals. In 11 other specimens (2 from Hidalgo, 8 from Pan de Olla, 1 from Cruz Blanca) the largest (second) supraocular also touches the prefrontals as in *furcirostris*, but a small supraocular is present between the second supraocular and first superciliary. In two others (Hidalgo and Pan de Olla) the second supraocular contacts the prefrontal on one side, is narrowly separated on the other. In the remain-

ing nine, the prefrontals are broadly or narrowly separated from the second supraocular.

The U. S. National Museum has one other specimen (no. 14605) from "Mexico."

Eumeces sumichrasti (Cope)

Ten specimens are from Piedras Negras, Guatemala (nos. 113609-12), Palenque, Chiapas (nos. 113613-5), and La Esperanza, Chiapas (nos. 113616-7).

The only difference apparent between the Pacific and Atlantic coast specimens is in the longer retention by the former of the juvenile stripes. An adult from La Esperanza measuring 75.4 mm from snout to vent still retains very distinct, dark-edged light stripes, while a specimen from Piedras Negras measuring 66.5 mm. snout to vent shows no trace of the median stripe and very faint evidence of the dorsolateral light stripes.

The scale rows about the middle of the body vary from 26 to 30 (26, one; 28, two; 30, four).

The Museum has one other, the type (no. 6601), from Potrero, Veracruz.

Cnemidophorus sackii sackii Wiegmann

Through the courtesy of Dr. Robert Mertens I have recently received two photographs of the single type of *Cnemidophorus sackii* Wiegmann. These were furnished through the kindness of Dr. Eisentraut, of the Zoological Museum in Berlin. He reports that the type bears the collection number 884.

Comparison of these photographs (Fig. 1) with those reproduced in Gadow's monograph (Proc. Zool. Soc. London, 1906: 277-375) reveals a remarkable similarity to some individuals of his race *C. mexicanus balsas*, and especially to specimen C of text figure S3. No other race closely approaches the type in details of pattern. It is of special interest to note the origin of specimen C; it is from Cuernavaca, Morelos, a city through which Deppe most certainly passed enroute from Mexico City to Acapulco (see Bailey, Proc. U. S. Nat. Mus. 73 (12): 5. 1928). Not unreasonably it may be supposed that the type of *C. sackii* actually was collected near Cuernavaca. Inasmuch as no more reasonable locality can be anticipated, I hereby restrict the type locality of *Cnemidophorus sackii* Wiegmann to Cuernavaca, Morelos.

The form recognized by Gadow as *C. mexicanus balsas* thus becomes a synonym of *C. sackii sackii*. A tentative arrangement of subspecies

will be proposed in the checklist of lizards now in preparation.

Bipes canaliculatus Lacépède

In 1932 Edward H. Taylor and I secured 15 specimens of this species, two of which were presented to the Museum of the Instituto de Biología in Mexico City, and one of which was prepared as a skeleton. All were taken in one small area near the Balsas River in Guerrero at the junction of the same with the Mexico-Acapulco highway. They were found under the large, weathered, sandstone rocks characteristic of the slopes exposed by erosion of arroyos and larger streams. Fortunately, the collecting followed a rather heavy shower, which, as the region is semiarid and very barren, evidently is of no frequent occurrence. The surface of the ground was quite dry even after a day's exposure to the sun, but under the larger, coarse stones the soil remained moist, and here, especially under those stones at the base of trees and bushes, were the lizards found. Frequently they had made long, winding burrows in the soil just under the rocks, and occasionally one would be found with only a small

portion of the body above the ground and in contact with the lower surfaces of the rocks. The burrows were so characteristic that in many cases it could be observed that the lizards had at some time been present under rocks where none were then to be found. Presumably these creatures follow the level of moisture, and if it is raised to the surface or near it by a heavy shower, they should then be found under rocks more frequently than at any other time. During the dry season it is probable that only rarely would they be found in the upper, dry soil strata, except perhaps at night. Attempts to find them at night above ground were futile; in fact, one specimen was found under a rock at night. A local farmer said he occasionally plowed them up in his field, located in the flood plain of a stream entering the Río Balsas.

The intestinal contents of several specimens consisted largely of the elytrae and legs of Coleoptera.

When crawling about in the hands, the forelegs were frequently if not usually kept in active use, especially when the animals attempted to burrow or pry through small openings.

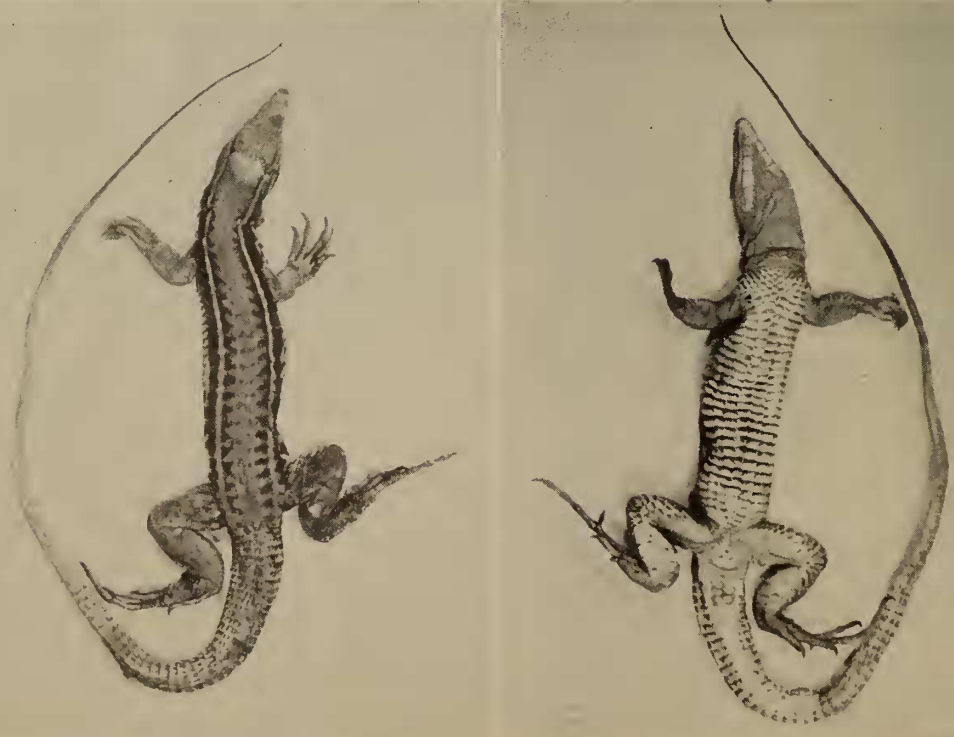


FIG. 1.—*Cnemidophorus sackii* Wiegmann, type, Zool. Mus. Berlin no. 884.

Cope (1898) placed his *Bipes biporus* in the monotypic genus *Euchirotetes*, distinguishing the two genera (*Bipes* and *Euchirotetes*) largely on the basis of the presence of a claw on the fifth digit of *Euchirotetes*, the absence in *Bipes*. In two of our specimens, these claws are distinctly present, although small, and thus the character previously considered of generic value is shown to be even specifically variable. *B. biporus*, however, remains distinct from *canaliculatus* on the basis of other characters.

The following table gives general features of scalation and proportion:

VARIATION IN BIPES CANALICULATUS							
No.	Ventral annuli on body	Ventral annuli on tail	Dorsal annuli	Pre-anal pores	Snout to vent	Tail	Head to occiput
					Mm	Mm	Mm
795	154	32+	197	6	158.8	24.0	8.0
966	154	29+	195	6	166.5	26.4	7.5
968	152	30+	194	6	166.5	24.8	8.0
969	149	30+	199	6	167.0	25.4	8.0
799	163	34+	200	6	170.0	27.0	8.0
800	152	32+	198	6	180.0	26.8	8.0
967	153	—	195	6	180.7	—	8.1
798	158	32+	199	6	181.0	28.0	8.0
797	162	—	198	6	185.0	—	8.2
964	156	32	200	6	190.0	29.0	8.0
796	155	—	196	6	192.0	—	8.3
965	164	35+	201	6	192.0	30.1	8.0

Two small frontals; a very large prefrontal; a large rostral; two nasals, somewhat smaller than rostral, nostrils perforating them nearer anterior edge; two large upper and two large lower labials, followed in each case by two smaller labials scarcely or no larger than scales of temporal region; eye in an ocular scale surrounded by a single preocular, two suboculars, and bordered posteriorly by two other small scales, all subequal; a large mental, smaller than rostral, and bordered posteriorly by another scale somewhat

smaller, this in turn bordered on each side by a scale somewhat smaller and in contact with lower labials; dorsal annuli separated from ventral annuli very abruptly on a lateral line on each side; dorsal surface of limbs with about 6 annuli; digits 2-4 with 3 dorsal, 4 ventral scales, first digits with 2 dorsal, 3 ventral scales; a short gular fold between and in front of arms; latter 5-6 mm long in our specimens.

Color in life, uniform light brown above, lighter between annuli and between scales forming annuli; head in front of eyes, brownish cream, ventral surfaces pink, lighter to white posteriorly, limbs especially pink.

But little variation obtains in the scutellation of head, quite uniform in all except one in which on each side is a minute scale against the nasal between the second upper labial and preocular, another in which the left supraocular of each side is partially fused with the prefrontal, and another in which the right frontal was broken up into small scales, possibly due to injury.

Xenosaurus rackhami Stuart

A single specimen (no. 111524) of this species, of which only the type from Guatemala has previously been described, was presented me by Sr. Rafael Martín del Campo, of the Instituto de Biología in Mexico City. It was collected by Mario del Toro Áviles at Santa Rosa, near Comitán, Chiapas, during the summer (June to August) of 1937.

It agrees with the description of *rackhami* in the relatively large size of the gular scales, close approximation of the enlarged tubercles on the forearm, and the broad, low character of the tubercles on the body. I count 34 transverse rows of abdominal scales from axilla to groin. The species' most distinctive feature is the large size of the gular scales.

HERPETOLOGY.—The validity of relative head width in defining the races of Ambystoma macrodactylum.¹ M. B. MITTLEMAN, New Rochelle, N. Y. (Communicated by HERBERT FRIEDMANN.)

In a recent paper (1948) I presented the results of an investigation into certain aspects of the morphological variation of the salamander *Ambystoma macrodactylum*. Although several characters were studied, only three were found to display any variation significantly associated with geo-

graphic origin. These important variables are: Vomerine tooth counts, proportion of head width to head length, and proportion of head width to snout-vent length. The variations of these three characters are associated with certain geographic populations of *Ambystoma macrodactylum*, such that when the definitive range of variation for

¹ Received October 20, 1948.